THE FEMALE PROSTATE.

AN ANATOMICO-SURGICAL STUDY.

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FROM the hypothesis that the prostate in the male arises as two separate glands, which are developments of the lining membrane of the first port of the urethra, instead of the Müllerian duct-coalescence-embryologic idea, gives the female the opportunity for a like glandular development. So in order to call a closer attention to the subject of the deep urethral (Skenes) glands of the female, I have dubbed them, in the title of this paper, the Female Prostate.

In substantiation of the claim "that the male prostate has an entirely distinct and different origin from that of the utriculus masculinus," and thus allowing, in the writer's opinion, the analogy between the male prostate and the female deep urethral glands, the following points in embryology are offered as evidence:

"In the male the utriculus masculinus (the coalesced Müllerian ducts) enters the back of the first part of the urethra (the uro-genital sinus) in the middle of the line, and the vasa deferentia (the Wolffian ducts) terminate, in the edge of the orifice of the utricle, on either side.

"In the female the vagina (the coalesced Müllerian ducts) enters the back of the vestibule (the uro-genital sinus) in the middle line, and the ducts of Gärtner (the Wolffian ducts) terminate in the lower part of the vagina on either side.

"The homology between the male prostatic utricle and the female uterus and vagina is a demonstrable fact.

"The male prostatic utricle and the female uterus and vagina have an origin distinct and different from that of the uro-genital sinus.

> "The prostate glands are developed in the wall of the genito-urinary sinus, at a point farther from the bladder than the opening of the utricle. They are apparently mucous glands of the uro-genital sinus, and they consist, in the fourth month, of a few branching columns of cells which cluster together at the back of the urethra, where they are seen in two separate masses, one on each side of the middle line. At this stage they are entirely within the layer of voluntary muscle of the urethral wall, and do not form any visible projection. In the ninth month they are larger, more fully developed, and form visible projections; they are two separate and distinct glands, and have grown beyond the limits of the external wall of the urethra."—Richardson.

It would seem from a study in comparative anatomy that the prostate gland, Cowper's glands, and the vesiculæ seminales (glands)[1] furnish the culture media for the sperm cell in the male.

Would it be straining a point too far to consider the female accessory glands, viz., the deep urethral, Bartholin[2] and Nabothian as secreting a still further culture media for the spermatozoa,[3] active if the male is passive and performing a greater function than a mere lubricant during coitus.

It is claimed as an undoubted fact that we have "the orgasm with discharge of semen in the male and the orgasm and reception of semen in the female." (Lydston.) The smaller mucous glands in the male are pouring out their fluid during the exciting stage of passion, we will say for the purpose of lubrication, but not so with the larger ones until the orgasm occurs.

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[1] Piersal finds glandular tissue in the vesiculæ seminales.

[2] The comparison between Cowper's glands and the glands of Bartholine is good. They both lie just below the bulb, within the triangular ligament, upon the levator ani or constrictor urethra muscle, as it is called, in this region. Their size and lengths of ducts are practically the same.

[3] Stöhr's Hystology, Fifth Edition, says: "In this mixture of fluids (*i.e.*, spermatozoa plus vesicular, prostatic and Cowper's gland fluid) the motions may continue for from twenty-four to forty-eight hours after death, and *for a still longer period in the secretions of the female genitalia.* * * * * Acids suspend motion, while animal fluids of alkaline reaction restore motion." This would tend to show that there was a secondary flow in the female that was sufficiently alkaline to neutralize the ordinary acid vaginal mucous.

From the limited investigation that the writer has been able to make there is a like functionating condition present in the female, with the difference that the simple mucous primary flow is greater than in the male and the secondary special flow with orgasm is not so profuse.

Observations on the chemistry of semen have been so few and fragmentary in character that the writer was not surprised not to be able, after considerable search, to gain any information relative to the chemistry or physiology of the female accessory-glandular fluid.

The study of the anatomy of the bladder and bladder-appendages has never been more active than to-day, and it is not impossible that some things have been overlooked by our older anatomists on account of their non-importance heretofore.

The new anatomies are giving the deep urethral glands of the female a passing notice, while the older ones are silent on that subject. Our recent works on the surgery of the urogenital tract of the female are further advanced even than the more recent anatomies in their anatomic description. This shows that the subject courts farther investigation.

The writer has found, after having made a number of female bladder dissections (the last ones being made in Weichselbaum's Pathologic Laboratory in Vienna), that the deep urethral glands of the female were located midway between the neck of the bladder and the meatus urinarus externus; placed laterally to the urethra, above the vesico-vaginal fascia, and having ducts which empty just internal to the external meatus. When hypertrophic the gland encroached upon the bladder-neck, the changes in shape during hypertrophy being similar to the male prostate during its outcroppings of lobules. (See Fig 1.)

In the majority of gonorrhœas of the female the urethra is invaded. During this urethritis the deep urethral glands are constantly in danger. Should they become infected the pathology present is much similar to gonorrhœal prostatitis

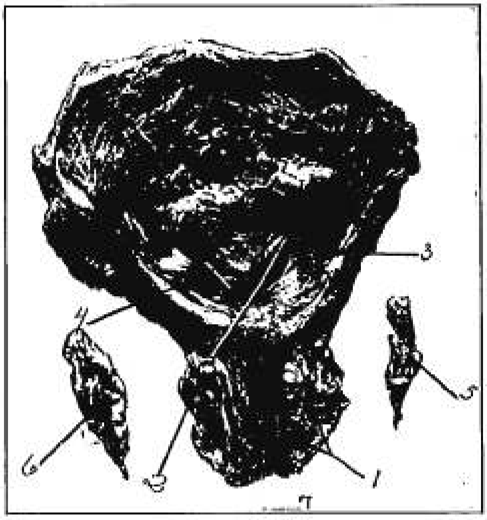

Fig. 1.—1, left hypertrophic gland; 2, right glandular lobule that acted as bolt valve in urethra; 3, wires sounding left urethral; 4, same in right urethral; 5 and 6, left and right hypertrophied gland of Bartholin; 7, tiny probe in duct of deep urethral gland.

in the male. Should pus form and the abscess break, the solution of continuity will either be toward the urethra or toward the vagina. Should the vaginal route be taken, there is great danger of an urethro-vaginal fistula, which is practically a vesico-vaginal fistula.

The vesico-vaginal fascia is so thin and so lacking in tone quality that an abscess penetration of it is effected with no great effort. Should the urethra remain competent the drainage opening will close and the abscess will reform *ad libitum* until surgical help is called. Should this infection be not sufficiently virulent to produce a breaking down of the tissues, there will remain a passive inflammation that by the stimulating effect within the acinus will produce an hypertrophy of the glands.[4]

The usual cases come late to the surgeon. Should there be sufficient time to abort suppuration, the best procedure, in the writer's opinion, is to slit the ducts to the glands and cauterize the field with silver nitrate.

If suppuration is present, the abscess should be opened from the vaginal side and properly drained. After resolution has taken place if any glandular remnants remain they should be taken away during the interval between the inflammatory crises, thus giving the operator a chance to avoid urethro-vaginal fistula. In case of urethro-glandular fistula, cauterization of the fistulous tract and abscess cavity should be done, followed by an interval operation, if possible, after the urethra has healed.

In vesico-vaginal fistula a plastic operation with the removal of all glandular remnants is indicated.

In all of these cases the bladder-neck will be found inflamed and will need attention.

The writer sees no reason why hypertrophy should need surgical attention unless it should happen to be like the case illustrated. Even with that condition present, the Fenwick operation (with the large urethral specula for the removal of papillomatous growths in the bladder) could be utilized for the removal of the glandular lobule.

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[4] See writer's article on Pathologic Changes Resulting from Prostatic Enlargement. American Medicine, April 8, 1905.

The report of three cases will give an idea of the kind of cases encountered by the surgeon that are due to inflammation of these glands:

CASE I.—Mrs. "X." Operated by the writer several years ago for kidney stone, with recovery. About a year following operation she was infected by her husband with gonorrhœa. On account of her innocence and unsuspecting disposition the writer was called late, and consequently got the sequela of the disease, which in this case was an acute adenitis of the deep urethral glands. Under treatment the inflammation subsided to a marked degree, leaving a passive inflammation with tenderness and some enlargement in that region. An operation for the removal of the glands was suggested, which was declined by the patient. The fact is the patient is not aware of the cause of her trouble, and, unfortunately for the writer, considers that it is a remnant of her old kidney trouble.

CASE II.—In consultation with a doctor of our city, Miss "Y." was examined. She gave a history of acute inflammation at the neck of the bladder; emphatically denied gonorrhœal infection. She was ordered to the hospital, where a vaginal examination was made, at which time a slide was smeared with pus milked from the deep urethral glands. The pus contained Nisserian diplococci; a cystoscopy was done the next day; neck of the bladder found highly congested; bladder washed and neck painted with silver nitrate; ducts of glands slit and cauterized with silver nitrate. Two weeks after leaving the hospital there was a recurrence of the adenitis, with suppuration. A cutting operation for drainage, followed by the removal of the glands, during interval, was suggested—which suggestion caused the discharge of both the attending physician and the writer. From us she passed to the care of a thoroughly competent practitioner, who called in a surgeon, who was also thoroughly competent, but they failed to find the true cause of the trouble, and from these men the patient has drifted until finally on account of their flowery promises, she has been attracted to the Osteopaths and the Christian Scientists. As this disease is entirely out of their spheres, the writer would not be surprised, at no distant date, to have the patient return for the surgical relief that was advised in the beginning.

CASE III.—Was called to Detroit to see Mrs " Z.", who gave a history of infection of deep urethral glands seven years ago, which was followed with abscess formation. Vesico-vaginal fistula followed the breaking of the abscess, leaving an opening larger than would admit one finger. She had been operated five or six times by competent surgeons for closure of fistula, with negative results.

The writer proposes, in endeavoring to close the fistula, in this case, to do a suprapubic cystotomy in two sittings. After cleaning the bladder thoroughly, to freshen the edges of the fistula, close same tightly with chromicised catgut, then cover over the whole fistulous region with a flap composed principally of the bulb of the vagina, patient being put to bed, lying on her belly, in order to drain the urine away from the wound. Should the closure be complete a urethral canal will be tunneled at another sitting.